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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,853	04/12/2004	Setsuo Misaizu	1614.1397	1747

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EXAMINER	
CURS, NATHAN M	
ART UNIT	**PAPER NUMBER**
2613	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/821,853	MISAIZU ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 2, 4, 5, 7, 8, 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 4, 7 and 10, the claims recite the limitation "storing an average", which indicates storing a single number. However, the claims also recite the limitations "a minimal value of the average" and "a maximal value of the average", which make the claims indefinite, because the claimed "average" cannot be a single number if it has both a minimal value and maximal value.

Claims 2, 5, 8 and 11 recite the limitations "wherein when the minimal value and the maximal value are set as 0% and 100%, respectively, the first average and the second average are set as about 25% and about 75%, respectively". The claim is indefinite because it's unclear what "0%", "100%", "25%" and "75%" are percentages of.

Claims 4 and 10 recite the limitation "a feature similar to the limiter amplifier". The claims are indefinite because the scope of this limitation is unclear.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

> the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Solheim et al. ("Solheim") (US Patent No. 5896391) in view of Han et al. ("Han") (US Patent No. 6822214).

Regarding claim 1, Solheim discloses a method of controlling an identification level for a receiver (col. 4, lines 48-61), using a comparator to determine the received signal (col. 5, lines 40-54), and reproduces data (col. 4, lines 30-38), the method comprising steps of: changing an identification level supplied to the comparator from a lower bound to an upper bound thereof and storing an average of an output of the comparator together with the identification level (col. 6, lines 5-17, where the bit error rates read on averages of outputs from the comparator); setting a first average of a minimal value and a predefined value and a second average of a maximal value and the predefined value, said predefined value being between the minimal value and the maximal value (col. 6, lines 5-17), and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average (col. 6, lines 5-17); and computing an optimal identification level based on the first identification level and the second identification level and supplying the optimal identification level to the comparator (col. 5, lines 55-57). Solheim's disclosure suggests data regenerating optical receivers as an application of for data regenerators (col. 1, line 65 to col. 2, line 27), and suggests differential amplifiers as comparators (col. 2, lines 28-38), but Solheim does not explicitly place his data regenerator circuit into a certain type of receiver or disclose that his data regenerator circuit includes an optical to electrical converter and or that his comparator is a limiter amplifier. Han discloses a data regenerating optical receiver, including an optical to electrical converter, followed by an amplifier, followed by a comparator limiter amplifier for achieving the signal levels necessary for data regeneration of a received optical signal (fig. 4 and col. 3, line 29 to col. 4,

line 40). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the data regenerator of Solheim, using an optical to electrical converter, amplifier and comparator limiter amplifier in place of the comparator of Solheim, to make Solheim's data regenerator a data regenerating optical receiver, since Solheim suggests data regenerating optical receivers as an application for data regenerators.

Regarding claim 3, the combination of Solheim and Han discloses the method as claimed in claim 1, but does not explicitly limit the optimal identification level to being set to a level of 30% through 40% in a level range between the first identification level and the second identification level. However, Han discloses that if the power of an optical signal is strong, the bit noise of a bit 1 value will be higher than the noise of a bit 0 value, resulting in a slicing level that is slightly closer to a low level than a high level rather than at the midpoint between a low level and high level (fig. 3 and col. 1, line 61 to col. 2, line 15). It would have been obvious to one of ordinary skill in the art at the time of the invention that the identification level of the combination would be set to a level of 30% through 40% in a level range between the first identification level and the second identification level, since Han suggests a slicing level less than 50% when receiving a strong optical signal.

Regarding claim 7, Solheim discloses a data regenerator using a comparator to determine an electric signal (col. 5, lines 40-54), and reproducing data (col. 4, lines 30-38), comprising: a change part changing an identification level supplied to the comparator from a lower bound to an upper bound thereof and a storage part storing an average of an output of the comparator together with the identification level (col. 6, lines 5-17, where the bit error rates read on averages of outputs from the comparator); and a computation part setting a first average of a minimal value and a predefined value and a second average of a maximal value and the predefined value, said predefined value being between the minimal value and the maximal

value, and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average (col. 6, lines 5-17), computing an optimal identification level based on the first identification level and the second identification level, and supplying the optimal identification level to the comparator (col. 5, lines 55-57). Solheim does not explicitly place his data regenerator circuit into a certain type of receiver or disclose that his data regenerator circuit is an optical receiver and or that his comparator is a limiter amplifier. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Solheim and Han as described above for claim 1.

Regarding claim 9, the combination of Solheim and Han discloses the optical receiver as claimed in claim 7, but does not explicitly limit the optimal identification level to being set to a level of 30% through 40% in a level range between the first identification level and the second identification level. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the identification level of the combination would be set to a level of 30% through 40% in a level range between the first identification level and the second identification level, as described above for claim 3.

5. Claims 4, 6, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Solheim (US Patent No. 5896391) in view of Han (US Patent No. 6822214) as applied to claims 1, 3, 7 and 9 above, and further in view of Bruce et al. ("Bruce") (US Patent No. 6519302).

Regarding claim 4, Solheim discloses a method of controlling an identification level for a receiver (col. 4, lines 48-61), using a comparator to determine the received signal (col. 5, lines 40-54), and reproduces data (col. 4, lines 30-38), the method comprising steps of: changing an identification level supplied to the comparator from a lower bound to an upper bound thereof and storing an average of an output of the comparator together with the identification level (col.

6, lines 5-17, where the bit error rates read on averages of outputs from the comparator); setting a first average of a minimal value and a predefined value and a second average of a maximal value and the predefined value, said predefined value being between the minimal value and the maximal value (col. 6, lines 5-17), and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average (col. 6, lines 5-17); and computing an optimal identification level based on the first identification level and the second identification level and supplying the optimal identification level to the comparator (col. 5, lines 55-57). Solheim's disclosure suggests data regenerating optical receivers as an application of for data regenerators (col. 1, line 65 to col. 2, line 27), and suggests differential amplifiers as comparators (col. 2, lines 28-38), but Solheim does not explicitly place his data regenerator circuit into a certain type of receiver or disclose that his data regenerator circuit includes an optical to electrical converter and a limiting amplifier and or that his comparator is a monitoring limiter amplifier. Han discloses a data regenerating optical receiver, including an optical to electrical converter, followed by an amplifier, followed by a comparator limiter amplifier for achieving the signal levels necessary for data regeneration of a received optical signal (fig. 4 and col. 3, line 29 to col. 4, line 40). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the data regenerator of Solheim, using an optical to electrical converter, amplifier and comparator limiter amplifier in place of the comparator of Solheim, to make Solheim's data regenerator a data regenerating optical receiver, since Solheim suggests data regenerating optical receivers as an application for data regenerators. Bruce discloses a data regenerator where the slicing level optimization circuit is implemented as a separate monitoring circuit from the data regeneration circuit (fig. 2 and col. 3, line 35 to col.l 4, line 39), and specifically discloses his invention as improving on Solheim (col. 2, line 29 t col. 3, line 31). It would have been obvious to one of ordinary skill in the art at the time of the

invention to use a separate monitoring circuit from the data regeneration circuit for the slicing level optimization circuit of Solheim, based on Bruce's teaching of separate the two circuits to reduced generating errors.

Regarding claim 6, the combination of Solheim, Han and Bruce discloses the method as claimed in claim 4, but does not explicitly limit the optimal identification level to being set to a level of 30% through 40% in a level range between the first identification level and the second identification level. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the identification level of the combination would be set to a level of 30% through 40% in a level range between the first identification level and the second identification level, as described above for claim 3.

Regarding claim 10, Solheim discloses a data regenerator using a comparator to determine an electric signal (col. 5, lines 40-54), and reproducing data (col. 4, lines 30-38), comprising: a change part changing an identification level supplied to the comparator from a lower bound to an upper bound thereof and a storage part storing an average of an output of the comparator together with the identification level (col. 6, lines 5-17, where the bit error rates read on averages of outputs from the comparator); and a computation part setting a first average of a minimal value and a predefined value and a second average of a maximal value and the predefined value, said predefined value being between the minimal value and the maximal value, and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average (col. 6, lines 5-17), computing an optimal identification level based on the first identification level and the second identification level, and supplying the optimal identification level to the comparator (col. 5, lines 55-57). Solheim does not explicitly place his data regenerator circuit into a certain type of receiver or disclose that his data regenerator circuit is an optical receiver with a limiter amplifier and or that

his comparator is a monitoring limiter amplifier. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Solheim, Han and Bruce as described above for claim 4.

Regarding claim 12, the combination of Solheim, Han and Bruce discloses the optical receiver as claimed in claim 10, but does not explicitly limit the optimal identification level to being set to a level of 30% through 40% in a level range between the first identification level and the second identification level. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the identification level of the combination would be set to a level of 30% through 40% in a level range between the first identification level and the second identification level, as described above for claim 3.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- US Patent No. 6735259 – discloses a data regenerator with adjustable slicing level based on bit error rate, similar to Solheim, but using a predetermine sequence of sacrificial bits in setting the slicing level.
- US Patent No. 6826372 – discloses an optical receiver, averaging the output of a limiter amplifier to determine a slicing level, but does not disclose using a memory to store the averaging information.

7. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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